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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/623,059

07/18/2003

Hans-Artur Bosser

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07/13/2006

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EXAMINER

VALENTIN, JUAN D

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 07/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,059

Applicant(s)

BOSSER ET AL.

Examiner

Juan D. Valentin II

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the methods as claimed must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Applicant is unclear as to which features from the claim methods must be shown. All the claimed method features must be shown in at least one drawing figure. For a example of one

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way in which a claimed method can be shown in drawings, applicant is advised to Fig. 4 of Opsal et al. (USPN '661 B1, hereinafter Opsal).

Response to Arguments

2. Applicant's arguments filed 04/19/2006 have been fully considered but they are not persuasive. Applicant has argued on page 8 (last paragraph)- page 9 (first paragraph) that Opsal et al. does not disclose "selecting tabulated curve shape parameters of the acquired measured spectrum and comparing such curve shape parameters to the tabulated curve shape parameters of the calculated analysis spectrum". It is unclear from the independent claims what exactly the curve shape parameters are. It is the position of the Office that Opsal indeed does disclose comparing measured curve shape parameters to tabulated (theoretical) curve shape parameters, this can be seen at col. 3, lines 31-40 which state a theoretical model (i.e. tabulated) is created. The calculated response is compared to the measured result, based on the comparison, the model parameters (width and height, i.e. curve shape parameters) are modified.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Opsal et al. (USPN '661 B1, hereinafter Opsal) in view of Shchegrov (USPN '892 B2).

Claims 1-15

Opsal discloses acquiring an optical spectrum at one location of the layer stack and selecting a tabulated acquired spectrum curve shape parameter, calculating an analysis spectrum on the basis of specified optical parameter values to obtain a calculated (theoretical) analysis spectrum and tabulated calculated spectrum curve shape parameters, comparing the acquired spectrum curve shape parameters to the calculated (theoretical) curve shape parameters, and selecting a match between the acquired spectrum curve shape parameters and the calculated (theoretical) spectrum curve shape parameters, calculating associated analysis spectrum or spectra corresponding to selected optical parameters corresponding to the match, determining values or value ranges for the optical parameters of the layer stack by comparing the calculated associated analysis spectrum or spectra with the acquired optical measured spectrum (claims 1, 6, & 8, abstract, col. 3, line 31- col. 4, line 32, col. 5, lines 18-30, lines 39, 51, col. 6, line 1, col. 7, line 8).

Opsal substantially teaches the claimed invention except that it fails to show classifying the acquired measured spectrum on the basis of curve shape parameters that characterize the measured spectrum and are determined therefrom and comparing those curve shape parameters to corresponding spectrum curve shape parameters calculated for known layer stacks in order to determine values or value ranges for the optical parameters to be identified, on the basis of which the analysis spectrum or spectra for comparison with the measured spectrum is/are calculated. Shchegrov shows that it is known to provide optimization, classifying the acquired measured spectrum on the basis of curve shape parameters that characterize the measured spectrum and are determined therefrom and comparing those curve shape parameters to corresponding spectrum

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curve shape parameters calculated for known layer stacks in order to determine values or value ranges for the optical parameters to be identified, on the basis of which the analysis spectrum or spectra for comparison with the measured spectrum is/are calculated (claim 8, abstract, col. 2, lines 26-43, col. 4, lines 53-64, col. 5, line 27-40, & col. 7, line 13-col. 11, line 62, esp. col. 8, lines 4-24 & col. 10, lines 45-57) for an parametric profiling system. It would have been obvious to someone of ordinary skill in the art to combine the device of Opsal with the classifying and comparing shape parameters of Shchegrov for the purposes of providing improved control for lithographic and etching processes in order to compensate for any errors in profile parameters (Shchegrov, abstract). It is the position of the Office that while not specifically using the word “classifying”. Shchegrov indeed classifies the acquired profile measurement because it would have been obvious to someone of ordinary skill in the art at the time of the claimed invention that there would be a need to classify the acquired profile measurement in order to be able to sort through the different types of profiles stored within the profile library of Shchegrov (col. 10, lines 10, lines 29-36) which is accomplished at the same time as the comparing step.

Opsal in view of Shchegrov teaches the use of least squares fitting algorithm (fine/coarse fitting methods) (claims 4 & 13, Opsal, col. 6, lines 47-52). Opsal in view of Shchegrov further discloses wherein the calculated analysis spectrum is optionally corrected (normalized) for (col. 5, lines 39-51). Opsal in view of Shchegrov simultaneously determine all the optical parameters of the sample under test (claim 7, Shchegrov, col. 11, lines 18-40).

It is obvious to someone of ordinary skill in the art at the time of the claimed invention that the methods taught by Opsal in view of Shchegrov are composed in a computer readable program that is stored on a computer readable medium for the purposes of sending the program

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and running the inspection process on multiple machines throughout a manufacturing plant (claims 10-13).

Conclusion

4. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

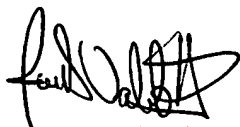
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan D. Valentin II whose telephone number is (571) 272-2433. The examiner can normally be reached on Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Juan D Valentin II

Examiner 2877

JDV

July 3, 2006



LAYLA G. LAUCHMAN
PRIMARY EXAMINER